

IN THE CLAIMS:

Please amend the claims as follows:

1. (twice amended) A base station array [An] antenna assembly having an operating frequency and a vertical radiation pattern with a main lobe axis defining a downtilt angle with respect to the earth's surface, the antenna assembly comprising:

a plurality of antenna means in first, second, and third antenna groups physically disposed along a backplane, the backplane having a longitudinal axis along which the antenna means are disposed;

differential phase adjustment means electrically disposed on a path of transmission line means between the first [second] and third antenna groups configured to simultaneously advance a phase angle of a signal to one of said first [second] and third antenna groups and delay the phase angle of said signal to the other of said first [second] and third antenna groups;

such that adjustment of the phase adjustment means results in variation of the vertical radiation pattern downtilt angle between a first fixed position and a second fixed position;

said differential phase adjustment means including coupling means arcuately moveable along an arcuate section of said transmission line means to cause said simultaneous advance of a phase angle of a signal to one of said first and third antenna groups and a delay of the phase angle of said signal to the other of said first and third antenna groups.

24. (twice amended) A base station array [An] antenna assembly having an operating frequency and a vertical radiation pattern with a main lobe axis defining a downtilt angle with respect to the earth's surface, the antenna assembly comprising:

a plurality of antennas in first, second, and third antenna groups physically disposed along a backplane, the backplane having a longitudinal axis along which the antennas are disposed;

a phase adjustment mechanism electrically disposed between the first [second] and third antenna groups, the phase adjustment mechanism including:

an input coupling element;

a movable coupling section having a pivotally mounted first end electromagnetically coupled to the input coupling element; and

a semicircular, air-substrated transmission line section electromagnetically coupled to a second end of the movable coupling section;

such that pivotal position adjustment of the phase adjustment mechanism results in variation of the vertical radiation pattern downtilt angle between a first fixed position and a second fixed position.

32. (twice amended) A base station array [An] antenna assembly having an operating frequency and a vertical radiation pattern with a main lobe axis defining a downtilt angle with respect to the earth's surface, the antenna assembly comprising:

a plurality of antennas in first, second, and third antenna groups physically disposed along a backplane, the backplane having a longitudinal axis along which the antennas are disposed;

a phase adjustment mechanism electrically disposed between the first [second] and third antenna groups, the phase adjustment mechanism including:

an input coupling element;

a movable coupling section having a pivotally mounted first end electromagnetically coupled to the input coupling element; and

a semicircular, air-substrated transmission line section electromagnetically coupled to a second end of the movable coupling section;

the phase adjustment mechanism having a range of adjustment including a minimum downtilt position, a mid-point, and a maximum downtilt position;

a drive mechanism coupled to the movable coupling section;

electrical path lengths at the operating frequency, from the input coupling element to each of the antennas, are selected to define a progressive phase shift between each of the antennas such that, with the phase adjustment mechanism set at its mid-point, the vertical radiation pattern downtilt angle is approximately 7 degrees;

such that adjustment of the phase adjustment mechanism results in variation of the vertical radiation pattern downtilt angle.

Please add new claims 34-49.

34. The antenna assembly of claim 1 wherein the coupling means is capacitively coupled to the transmission line means.

35. The antenna assembly of claim 1 wherein the coupling means includes a pivotally

mounted, electrically conductive section.

36. The antenna assembly of claim 1 further comprising drive means coupled to the coupling means.

37. The antenna assembly of claim 36 wherein the drive means comprises an electric motor.

38. The antenna assembly of claim 36 wherein the drive means receives control inputs from a remote location.

39. The antenna assembly of claim 38 wherein the drive means further includes means configured to transmit position information relating to the phase adjustment means to the remote location.

40. The antenna assembly of claim 39 wherein said means configured to transmit position information includes a position detector.

41. The antenna assembly of claim 40 wherein said position detector comprises a Hall effect sensor, an optical encoder, a synchro servo system or other position detection device.

42. The antenna assembly of claim 36 wherein said drive mechanism is a resolver, or servomotor, or stepping motor or other electric motor, or other positioning device.

43. The antenna assembly of claim 1 wherein at least one of said antenna groups includes in a feed comprising a dielectric-substrated microstrip transformer.

44. The antenna assembly of claim 1 wherein said arcuate section of said transmission line means comprises an air-substrated metal conductor.

45. The antenna assembly of claim 24 wherein the second end of the movable coupling section is capacitively coupled to the transmission line section.

46. The antenna assembly of claim 24 wherein at least one of said antenna groups includes in a feed comprising a dielectric-substrated microstrip transformer.

47. The antenna assembly of claim 25 wherein said drive mechanism comprises a resolver, or servomotor or stepping motor or other electric motor, or other positioning device.

48. The antenna assembly of claim 28 wherein the drive mechanism includes a position detector.

49. The antenna assembly of claim 48 wherein said position detector comprises a Hall effect sensor, an optical encoder, a synchro servo system or other position detection device.